

Human Factors Assessments of Environmental Technologies

Donald R. Carson (hazmat@iuoeiettc.org; 304-253-8674)

John Moran (hazmat@iuoeiettc.org; 304-253-8674)

B.P. Shagula (hazmat@iuoeiettc.org; 304-253-8674)

IUOE International **Environmental Technology** and Training Center'
250 Airport Circle
Beaver, WV 25801

Abstract

The “Human **Factors** Assessments of Environmental Technologies” program is a cooperative agreement between the Department of Energy, **Morgantown** Energy Technology Center and the International Union of Operating Engineers (N-JOE) National HAZMAT Program. The IUOE program is being operated in new facilities constructed on the grounds of the MSHA Training Academy in Beaver, West Virginia. The agreement is for five years, the first year having just been completed is the focus of this paper.

The Federal government has devoted substantial **resources** in recent years to the research, development, and demonstration of new and innovative environmental technologies. A 1995 **Office** of Technology report estimated that about \$3.5 billion was devoted to such **RD&D** projects among twelve agencies in **FY1994**. DOE, EPA and DoD had the most robust programs. The purpose of these significant efforts is the development and deployment of technologies to facilitate more effective, timely and less costly environmental remediation of hazardous materials contaminated facilities and disposal sites. The development of these advanced environmental technologies has, however, not been paralleled by concurrent attention to the unique human factors interface and worker/public hazards posed by them. The cooperative agreement which is the subject of this paper is the first such program to specifically focus on these issues.

The first year of the cooperative agreement has been devoted to the construction of administrative and test facilities, development of test procedures and protocols including a HSRB (Human Subjects Review Board), and the conduct of eleven technology assessments and the preparation and issuance of the assessment technical reports.

Two **basic** types of technology **assessments** have been defined Type I and Type II. Type I technology assessments are those involving new technologies which **are** worker protection technologies. An example is the Advanced Worker Protection System (**AWPS**) developed by Oceanering Space Systems which is an advanced worker protection ensemble employing heat

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stress management capability. Preliminary results **of** the assessment of the AWPS **will** be presented, as well as the protocol and procedures development and application process upon which the assessment was based. Type II technology assessment are those which involve new remediation technology equipment (concrete **scabbling** and metal descaling technologies are examples). Several such technologies have been evaluated during this **first year**. The results will be presented and discussed, as well as the human **factors/hazard** assessment techniques which are employed.

The products of this program are

- I. Three technical reports for each assessment conducted, each intended to serve a specific need and audience.
- II. A technology specific operations and maintenance training module for us by the developer and the user.
- III. Video supplements to the training modules developed **from** the assessment video documentation materials.
- IV. Technical assistance to the technology development community to facilitate understanding of human factors and-hazard **prevention/mitigation** methodology.
- V. Use of a 20-point technology **selection/assessment** matrix developed **by** METC **which** assures participation of the development, DOE and other stakeholders.

The ultimate objective of this program is to serve as a catalyst to stimulate a focus on human factors and hazard issues **early** in the technology development **cycle** for the purpose of reducing subsequent problems and the related costs during and after deployment.

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